Acute and Subacute Effects of Chilli Pepper (Dihydrocapsaicin and Capsaicin) on the Number of White Blood Cells in Rats

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1. Acute Effects of Dihydrocapsaicin and Capsaicin on the Number of White Blood Cells in Rats

The acute effects of dihydrocapsaincin (DHC) and capsaicin (CAP) on the number of white blood cells (WBCs), neutrophil, eosinophil, basophil, monocyte, lympfocytes, T lymphocytes, B lymphocyte and NK cells, and serum corticosterone levels were studied in rats. Male 7-week-old Sprague Dawley rats were divided into DHC (dose = 3.0mg/kg BW), CAP (dose = 3.0mg/kg BW) and the CON group. The number of total WBCs was 1.30-1.42 times significantly higher in DHC group than in CON group at 6-12h. The number of neutrophil was 1.41- 1.62 times significantly higher in DHC group than in CON group at 6-12h. The number of total WBCs and neutrophil, however, showed no significant changes between CAP and CON groups. The number of lymphocytes was 0.61 and 0.70 times significantly lower in DHC and CAP groups than in CON groups at 3h. The number of T lymphocyte and B lymphocyte was 0.54-0.74 times lower than in DHC group than in CON group. CAP, however, did not significantly change the number of T lymphocyte and B lym- phocyte. No significant changes in the number of NK cells were observed among three groups. CAP and DHC did not change the number of monocyte, eosinophil and basophil. No significant effects of the serum corticosterone levels were observed among three groups. In conclusion, capsaicinoids decreased the number of acquired immunity cells, and increased the number total WBCs and nutrophil without changing the number of monocyte, eosionophil and basophil. The magnitude of these effects was rela- tively higher in DHC than in CAP.

【References】

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2. Akimoto S, Tanihata J, Kawano F, *et al*.: Effects of dihydrocapsaicin and capsaicin on the distribution of white blood cells in rats. *Accepted for presentation* to the 30th International Congress of Physiological Sci- ences (July 27-August 1, 2009, Kyoto)

2. Subacute Effects of Dihydrocapsaicin and Cap- saicin on the Number of White Blood Cells in Rats

Capsaincinoids such as capsaicin (CAP) and dihydrocapsaicin (DHC) are responsible for up to about 90% of the total pungency of pepper fruits. Although these capsaicinoids affect immune-response system though various factors such as adrenal hormones and neuropeptides, capsaicin-induced changes of the number and distribution of the white blood cells (WBCs) are still unknown. In the present study therefore, the subacute effects of CAP and DHC (dose =3mg/kg BW/day for 10 days, *subcutaneous inject tion*) on the number of WBCs were studied. Male 8-week-old adult Sprague Dawley rats were divided into CAP, DHC and control (CON) groups. CAP increased the number of the neutrophil and eosinophil to 2.14 and 2.90 times, and the decreased the number of the total WBCs, lymphocytes and monocyte to 0.77, 0.70 and 0.50 times, respectively, as compared with CON group. Similar tendencies were observed in the case of DHC. No effects of CAP and DHC on the number of basophil were observed. Furthermore, CAP and DHC decreased thymus weight and in- creased adrenal weight, suggesting that capsaicinoids induced thymic atrophy and adrenal hypertrophy. These responses may be associated with redistribution of WBCs. In conclusion, the capsaicinoids de- creased the number of total WBCs, lymphocytes and monocyte and increased the number of neutrophil and eosinophil without changing the number of basophil.

【Reference】

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